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1.0 Scope

The purpose of this specification is to outline the procedures to be followed to install the Radar System in the flight vehicle. It is assumed that whoever installs the system is familiar with the space in which the installation is made. The location of pertinent attachment lugs and electronic connectors in the bay should be known. Estimated installation time for each step is given.

2.0 Mechanical Equipment Provisions

- 2.1 Radar Assembly (662R211) On Test Dolly (603R889)
 - 2.1.1 Lifting Fixture (510RC49)
 - 2.1.2 Right Hand Truss (652R113)
Left Hand Truss (652R115)
 - 2.1.3 Lifting Crane
 - 2.2 Radar Set Control (603R715)
 - 2.3 Instrumentation Mounted on Rack
 - 2.3.1 CEC Recorder on Rack
 - 2.3.2 Center Bar of Instrumentation Rack L3562772
 - 2.3.3 Lower Plate of Instrumentation Rack L3562784
 - 2.3.4 Mounting Hardware
 - 2.4 Single-Axis Platform (605R441)
 - 2.4.1 Bulkhead Bracket
 - 2.4.2 Roll Table Inner Cover (Including removable insulation pads)
 - 2.4.3 Roll Table Outer Cover
 - 2.5 Antenna Assembly (Including Pivot Point Attachment & Waveguide Elbow) (603R708) and (605R547)
 - 2.5.1 Bell Crank and Slide Rail Attachment
 - 2.5.2 Flexible Waveguide 24 inches long (579R261H01)
 - 2.5.3 Joggle Waveguide (613R130G01), (613R131G01)
 - 2.5.4 Protective Sheet
 - 2.5.5 Radome
 - 2.5 Tracker Camera (Maurer #222)

3.0 Electrical Equipment Provisions

- 3.1 Primary Power Requirement
 - 3.1.1 +28 V DC: STBY-617 watts, RUN - 735 watts plus 196 watts into PESAP
 - 3.1.2 115V AC +2%, 400 cps +1%, 3Ø, 4 wire: 162 volt-amperes, 90% power factor, 0.70 ampere maximum line current
 - 3.1.3 115V AC +5%, 360-530 cps, 3Ø, 4 wire: STBY - 2913 volt-amperes, power factor 94%
Run - 3830 volt-amperes, 94% power factor, 15 amperes maximum line current.
 - 3.1.4 115V AC +2%, 400 cps +1%, 3Ø, 4 wire to PESAP: 40 volt-amperes 90% power factor
- 3.2 Signal Input Requirement (R-1916 ref.)
 - 3.2.1 Ground speed signal
 - 3.2.2 Pitch angle signal
 - 3.2.3 Drift angle signal

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- 3.2.4 Roll angle signal
- 3.2.5 Antenna actuator feedback signals

3.3 Signal Output Provision - Equipment out light; 28V DC return on activation by radar equipment malfunction

4.0 System Weight

Radar Assembly	735 lb.
Radar Set Control	2 lb.
Antenna Assembly	135 lb.
Roll Table	15 lb.
Instrumentation Assembly	150 lb.

5.0 Additional Drawings and Photographs

- 5.1 Installation Drawing (652R097)
- 5.2 Interface Interconnection Diagram (662R313)
- 5.3 Antenna Specification (R-1915)
- 5.4 Antenna Installation (703R433)
- 5.5 Waveguide Assembly (662R566)
- 5.6 Photographs

AA 19377-Fig. 1	AA19744 Fig. 8
AA 19878-Fig. 2	AA19781 Fig. 9
AA 19876-Fig. 3	AA19779 Fig. 10
AA 19807-Fig. 5	AA17867 Fig. 11
AA 19808-Fig. 6	AA17861 Fig. 12
AA 19806-Fig. 7	AA18386 Fig. 21
	AA18387 Fig. 22
	AA20288 Fig. 23

5.7 Installation Sketch SK-PGK651028

5.8 SKJ52CR267

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6.0 Installation Procedure

6.1 Equipment Bay Installation (Total Installation Time: 1 hr. 45 min.)

Install the following items in the following order. There are mounting lugs on the forward bulkhead for the instrumentation rack and on the side formers for the system trusses.

6.1.1 Cover front corners of front wheel doors with padding for safety reasons. Check to see that cabling which does not belong to system, is out of the way. (10 minutes).

6.1.2 Center bar of instrumentation rack as shown in figure 9, is to be mounted horizontally and about halfway down the forward bulkhead. Mount with three clip angles facing upward. (5 min.)

6.1.3 Lower plate of instrumentation rack as shown in figure 10 is to be horizontally mounted on lower part of forward bulkhead. Mount with side lugs displaced towards bottom as shown in rack assembly Fig. 8. (5 min.)

6.1.4 Instrumentation excluding CEC recorder mounted on rack as shown in figure 5 is to be installed on upper half of forward bulkhead. (5 min.)

6.1.5 Insert the (3) pip pins provided with the center bar, through the clip angles on the upper surface of the center bar, thereby joining the upper rack to the center bar. See figure 8. (5 min.)

6.1.6 Attach right hand truss, 652R113 to appropriate starboard former lugs. (5 min.)

6.1.7 Attach left hand truss, 652R115 to proper port former lugs. Push radar frame attachment lugs toward bulkhead. (5 min.)

6.1.8 Move dolly with radar assembly directly under lower hatch opening of equipment bay. Transmitter location is aft of receiver location. See figures 1, 2 and 3.

6.1.9 Attach lifting fixture cables to eyebolts using pip pins provided. One eyebolt is located near each frame attachment point.

6.1.10 Attach lifting fixture clevis to crane by letting crane hook drop through upper hatch opening. Use aft pick-up point position in order to position crane hook over system C.G.

6.1.11 Remove frame pip pins by first unloading them by slowly and gently lifting the assembly with the crane. Make certain cables are not kinked prior to lifting. DO NOT LIFT BOTH RADAR AND DOLLY. Remove left hand member of dolly frame. It may be easier to remove dolly frame member before removing pip pins. Check to see that all electric cables are secure and out of the way. (10 min.)

6.1.12 Slowly and carefully raise the radar assembly with the crane and carefully guide into mounting position in the bay. Be very careful, particularly at the forward end of the assembly as it passes by the already mounted instrumentation, since the spacing between the instrumentation and this part of the radar is very close.

6.1.13 Move the radar assembly until the frame attachment points engage with the lugs of the right hand truss and insert pip pins. (10 min.)

6.1.14 Repeat (13) by pinning to the left hand truss. (5 min.)

6.1.15 Engage all available electrical connectors e.g. PQ5 to Q5, P8001 to J8001, etc. Don't forget the tracker intervalometer connector. (15 min.) See drawing 662R313.

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6.1.16 Install the CEC recorder with magazine on its mounting frame by carefully engaging the edges of the plate on the forward part of the recorder structure, into slots provided in the previously (step 3) mounted lower instrumentation plate. Adjust the vertical position of this plate so as to permit engagement of the two vertical "T" member into the slots and clips on the lower surface of the center bar, installed in step 2. Insert the two pip pins provided into the vertical "T" members and the four pip pins through the slides. Make certain that recorder with its support frame is pushed into position while maintaining horizontal attitude or slides will bind. (Recorder frame shown in fig. 8). This unit weighs about 80 lbs. Handle with care in fastening it to the instrumentation frame. Engage connectors. (15 min.)

6.1.17 Install interconnecting waveguide, 51OR157. Use "O" ring in choke flange on waveguide going to transmitter and "C" ring on waveguide end going to antenna. (10 min.)

6.1.18 To install lower hatch with tracker, connect cable from tracker to intervalometer first and then put the hatch in place. The hatch will be on its dolly which can be wheeled under the hatch opening that is to be covered. (10 min.)

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- 6.2 SAP Installation Procedure (Total Installation Time: 1 hr.10 min.)
 The SAP functional parts are housed in a package (see figures 21 and 22). Two heat reflecting covers each of which are lined with thermal padding enclose the inner SAP unit when installation is complete. The outer covers with their padding are shown in figure 3.
- 6.2.1 Install SAP mounting brackets and roll table mounting plate to its place on the inner bulkhead. (10 min.)
- 6.2.2 Install roll table (inner package) on its mounting plate. Be sure its thermal insulating pad is under the roll table base. See Figure 23. (10 min.)
- 6.2.3 The roll axis of the SAP shall be aligned to the roll axis of the vehicle within $\pm 1^\circ$, and the accelerometer input is depressed $31.9 \pm .1^\circ$ and maintained constant to ± 1 milliradian.
- 6.2.4 Place appropriate thermal insulating pads inside of inner cover and install on bulkhead. See figure 23. (20 min.)
- 6.2.5 Install outer cover with thermal insulation. This insulation is cemented to the inner side of the cover. (20 min.)
- 6.2.6 Connect the two cable connectors 1P1 and 1P2 to roll table (inner package) receptacles 1J1 and 1J2. This may require strong fingers and patience. Be sure and pack the cylindrical thermal insulating pad around connectors and through the connector hole of each metal cover. Thermal padding inside the inner cover should be placed so that this cylindrical pad reaches the roll table inner package. (10 min.)

6.3 Antenna Installation Procedure (Total Installation Time-3 hrs.)
 The procedure outlined here is to be used as a guide in installing the antenna after it has been initially fitted and bore-sighted. Extreme care should be exercised in handling the antenna. The radiating face shall be covered by a protective sheet so that nothing touches any area between the barriers. See figure 11. The barriers are attached directly to the beam. The estimated installation time for each step is given in the parentheses.

- 6.3.1 Install bellcrank and sliderail attachment to bellcrank and sliderail. (10 min.)
- 6.3.2 Install antenna by first securing its pivot point attachment to the pivot point. Be very careful not to bump or use as handles the power dividers or manifolds. (20 min.)
- 6.3.3 Lift front end of antenna and attach bellcrank and sliderail attachment to the four appropriate holes on the back of antenna. (20 min.)
- 6.3.4 Install joggle waveguide and then flexguide. See sketch (SKJ52CR267). Don't forget pressure rings. Tan jacket flexible waveguide choke will take "C" ring. See sketch (SKJ52CR267). (20 min.)
- 6.3.5 Connect appropriate cables to actuator transfer valve which has a 3-pin connector and LVDT connectors which are of the 5-pin type. Both LVDT connectors are alike, thus can be interchanged. Position LVDT (Actuator LVDT on 662R313) is on end of actuator attached to test bed hard point (or opposite to end of actuator attached to bell crank). Mod. Piston LVDT is located near end of actuator attached to bell crank. A wrong connection here would result in a wrong servo scale factor; that is, the antenna would move more degrees than it is supposed to when commanded by the navigation system.

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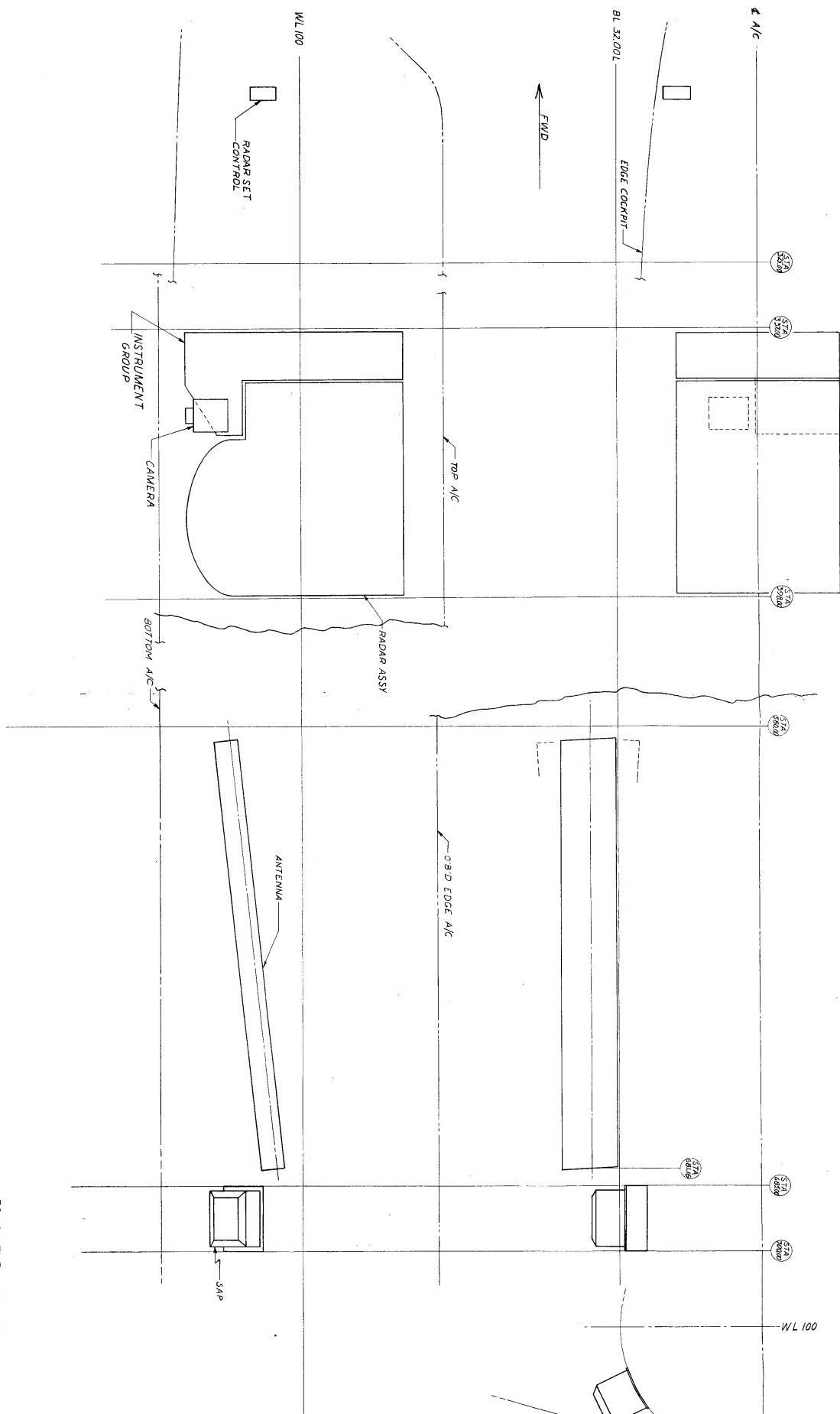
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Remove protective plate and handles from antenna radiating
face. (10 min.)

Note: Installation and removal of radome will be done by test bed crew.

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EQUIPMENT ARRANGEMENT
SCALE 1/10

SK-PCK 651028